CLAIMS:

1. A fuel cell assembly comprising:

a plurality of separate elements;

at least one groove network extending through the fuel cell assembly and including at least one filling port for the at least one groove network;

a seal within each groove network that has been formed in place after assembly of said separate elements, wherein the seal provides a barrier between at least two of said separate elements to define a chamber for a fluid for operation of the fuel cell; and,

a release agent for providing easier disassembly of one or more of the separate elements of the fuel cell.

2. A fuel cell assembly as claimed in claim 1, wherein the release agent is applied to the surface of one or more of the separate elements.

3. A fuel cell assembly as claimed in claim 2, wherein the release agent is selected from one or more of sodium lauryl sulphate, Teflon sprays, vegetable oils, mineral oils, silicone fluids, fluorosilicone fluids and soap solutions.

4. A fuel cell assembly as claimed in claim 1, wherein the seal is formed from a seal material and the release agent is added to the seal material.

5. A fuel cell assembly as claimed in claim 4, wherein the release agent is selected from one or more of silicone fluids, fluorosilicone fluids, mineral oils, vegetable oils, fluorocarbon fluids and soaps.

6. A fuel cell assembly as claimed in claim 4, wherein the release agent comprises a polydimethylsiloxane having a chain length in the range of 4 to 50 and added as 0.1 to 1.5 percent of the seal material.

7. A fuel cell assembly as claimed in claim 6, wherein the polydimethylsiloxane is added as 0.4 to 0.7 percent of the seal material.

8. A fuel cell assembly as claimed in claim 1, wherein the groove network comprises a plurality of closed groove segments, each of which comprises at least a groove segment in one of said separate elements that faces and is closed by another of said separate elements, thereby to form said closed groove segments.

9. A fuel cell assembly as claimed in claim 8, wherein at least some of said closed groove segments each comprise a first groove segment in one of said separate elements facing a second groove segment in another of said separate elements.

10. A fuel cell assembly as claimed in claim 8, wherein at least some of said closed groove segments each comprise a first groove segment in one of said separate elements and a second groove segment in another of said separate elements, wherein the second groove segment is offset from the first groove segment.

11. A fuel cell assembly as claimed in claim 8, which comprises a plurality of individual fuel cells.

12. A fuel cell assembly as claimed in claim 11, wherein each fuel cell comprises a plurality of separate elements, each of which includes a connection aperture, whereby the connection apertures form a connection duct of the groove network extending through each fuel cell, and wherein the connection ducts of individual fuel cells are interconnected and are connected to said at least one filling port, whereby the groove network extends through a plurality of fuel cells, to enable a seal for all of the fuel cells to be formed substantially simultaneously and wherein the seal has been formed by injection of a liquid elastomeric seal material and subsequent curing of the elastomeric seal material.

13. A fuel cell assembly as claimed in claim 8, which includes an external sealing layer formed around the exterior of the fuel cell assembly and formed from the same material as said seal within each groove network, wherein connections are provided between each groove network and the exterior of the fuel cell assembly and said external sealing layer and said seal within each groove network have been formed in place simultaneously, wherein the release agent is applied to surfaces sealed by the external sealing layer or the release agent is added to seal material used for forming the external sealing layer.

14. A fuel cell assembly as claimed in claim 1, in which the seal comprises at least one of: an ethylene/acrylic polymer; a fluoro elastomer; and an Ethylene Propylene Terpolymer.

15. A fuel cell assembly as claimed in claim 1, in which the seal comprises a flexible or rigid epoxy resin.

16. A fuel cell assembly as claimed in claim 1, in which the seal comprises a thermoplastic elastomer.

17. A fuel cell assembly as claimed in claim 16, in which the thermoplastic elastomer comprises a polyester elastomer.

18. A method of forming a seal in a fuel cell assembly comprising a plurality of separate elements, the method comprising:

(a) assembling the separate elements of the fuel cell assembly together;

(b) providing a groove network extending through the separate elements and a filling port open to the exterior in communication with the groove network;

(c) providing a release agent for easier disassembly of one or more of the separate elements of the fuel cell;

(d) connecting a source of uncured liquid seal material to the filling port and injecting the seal material into the groove network to fill the groove network and simultaneously venting gas from the groove network; and,

(e) curing the seal material, to form a seal in the groove network.

19. A method as claimed in claim 18, wherein step (c) comprises applying the release agent to the surface of one or more of the separate elements.

20. A method as claimed in claim 19, wherein step (c) comprises selecting the release agent from one or more of sodium lauryl sulphate, Teflon sprays, vegetable oils, mineral oils, silicone fluids, fluorosilicone fluids and soap solutions.

21. A method as claimed in claim 18, wherein step (c) comprises adding the release agent to the seal material.

22. A method as claimed in claim 21, wherein step (c) further comprises selecting the release agent from one or more of silicone fluids, fluorosilicone fluids, mineral oils, vegetable oils, flurocarbon fluids and soaps.

23. A method as claimed in claim 21, wherein step (c) further comprises providingpolydiemthylsiloxane with a chain length in the range of 4 to 50 and adding the release agent as 0.1 to 1.5 percent of the seal material.

24. A method as claimed in claim 23, further comprising adding the release agent as 0.4 to 0.7 percent of the seal material.

25. A method as claimed in claim 18, which includes providing a liquid silicone elastomeric material as the seal material and curing the seal material at an elevated temperature for a predetermined time.

26. A method as claimed in claim 18, which includes providing at least two separate groove networks, injecting a separate liquid seal material into each groove network of the fuel cell and selecting the composition of each liquid seal material, to provide compatibility with materials and liquids required for fuel cell operation and durability.

27. A method as claimed in claim 18, wherein the seal material comprises is a vinyl terminated methyltrifluoropropyl polysiloxane homopolymer.

28. A method as claimed in claim 18, in which the curable elastomeric material comprises at least one of: an ethylene/acrylic polymer; a fluoro elastomer; and an Ethylene Propylene Terpolymer.

29. A method as claimed in claim 18, in which the curable elastomeric material comprises a flexible or rigid epoxy resin.

30. A method as claimed in claim 18, in which the curable elastomeric material comprises a thermoplastic elastomer.

31. A method as claimed in claim 30, in which the thermoplastic elastomer comprises a polyester elastomer.

32. A composition for forming seals in a fuel cell assembly by injecting a sealing material into a groove network within the fuel cell assembly, the composition including a curable seal material containing:

(a) 100 parts by weight of a polydiorganosiloxane containing two or more silicon-atom-bonded alkenyl groups in each molecule;

(b) 5-50 parts by weight of a reinforcing filler;

(c) 1-20 parts by weight of an oxide or hydroxide of an alkaline earth metal with an atomic weight of 40 or greater;

(d) an organohydrogensiloxane containing three or more silicon-atom-bonded hydrogen atoms in each molecule, the hydrogen atoms

being present in an amount providing a molar ratio of silicon-atom-bonded hydrogen atoms in component (d) to silicon-atom-bonded alkenyl groups in component (a) which is in a range of 0.4:1 to 5:1;

(e) a platinum-type metal catalyst in an amount providing 0.1-500 parts by weight of platinum-type metal per one million parts by weight of component (a); and,

(f) a release agent.

33. A composition as claimed in claim 32, wherein the release agent is selected from one or more of silicone fluids, fluorosilicone fluids, mineral oils, vegetable oils, fluorocarbon fluids and soaps.

34. A composition as claimed in claim 32, wherein the release agent comprises a polydimethylsiloxane having a chain length in the range of 4 to 50 and is added as 0.1 to 1.5 percent of the seal material.

35. A composition as claimed in claim 34, wherein the polydimethylsiloxane is added as 0.4 to 0.7 percent of the seal material.

36. A composition as claimed in claim 32, wherein the seal material further comprises:

(i) 0.1-5.0 parts by weight of an organic peroxide in combination with component (e) or in place of component (e);

(ii) 0.01–5.0 parts by weight of an inhibitor; and

(iii) 0.01-100 parts by weight of a non-reinforcing extending filler.

37. A composition as claimed in claim 32, in which the polydiorganosiloxane of component (a) is a vinyl terminated polydimethylsiloxane having a viscosity of at least 55 Pa.s (55,000 cP) or a blend of lower and higher viscosity vinyl containing polydimethylsiloxanes such that the viscosity of the blend is at least 55 Pa.s (55,000 cP).

38. A composition as claimed in claim 37, wherein component (a) is a vinyl terminated trifluoropropylmethylsiloxane dimethylsiloxane copolymer in which the mole percent of methyltrifluoropropyl is 10-100 mole percent.

39. A composition as claimed in claim 32, wherein component (a) is a vinyl terminated diphenylsiloxane dimethylsiloxane copolymer in which the mole percent of diphenylsiloxane is 2-50 mole percent.

40. A composition as claimed in claim 32, in which component (e) is encapsulated in a thermoplastic organic polymer.

41. A composition as claimed in claim 32, in which component (e) is present in an amount to provide 5-50 parts by weight of platinum type metal per one million parts by weight of component (a), and the seal material is cured by heating it to a temperature of 30-120 °C.

42. A composition as claimed in claim 32, in which component (e) is an organic peroxide, instead of the metal catalyst, present in an amount of 0.5-5.0 parts per 100 parts of the seal material, and the seal material is cured by heating it to a temperature of 100-200 °C.

43. A composition as claimed in claim 32, in which the seal material further comprises:

(f) 0.1-20 parts by weight of an adhesion promoter which is an epoxy containing organosilicon compound, the adhesion promoter being added to the seal material before it is cured to improve bonding of the seal material during cure.

44. A composition as claimed in claim 36, in which the viscosity of the curable composition is 1,000-1,500 Pa.s (100,000-150,000 cp).

45. An electrochemical cell assembly comprising:

a plurality of separate elements;

at least one groove network extending through the electrochemical cell assembly and including at least one filling port for the groove network;

a seal within each groove network that has been formed in place after assembly of said separate elements, wherein the seal defines a barrier between at least two elements to define a chamber for a fluid for operation of the electrochemical cell assembly; and,

a release agent for providing easier disassembly of one or more of the separate elements of the fuel cell.

46. An electrochemical cell assembly as claimed in claim 45, wherein the release agent is applied to the surface of one or more of the separate elements.

47. An electrochemical cell assembly as claimed in claim 45, wherein the seal is formed for a seal material and the release agent is added to the seal material.

48. A method of forming a seal in an electrochemical cell assembly comprising a plurality of separate elements, the method comprising:

(a) assembling the separate elements of the electrochemical cell assembly together;

(b) providing a groove network extending through the separate elements and a filling port open to the exterior in communication with the groove network;

(c) providing a release agent for easier disassembly of one or more of the separate elements;

(d) connecting a source of uncured liquid seal material to the filling port and injecting the seal material into the groove network to fill the groove network and simultaneously venting gas from the groove network; and,

(e) curing the seal material, to form a seal in the groove network

49. A method as claimed in claim 48, further comprising applying the release agent to the surface of one or more of the separate elements.

50. A method as claimed in claim 48, further comprising adding the release agent to the seal material used for forming the seal.